

# BTT2024 / TCC2024 Program

Final Version June 19, 2024

We take this opportunity to thank and welcome everyone to Brightening Tomorrow Together 2024 and Thriving Through Change 2024. We hope that you will have a wonderful time in the Southernmost city of Canada. We look forward to seeing you again next year at Nurturing Humanity Sustainably 2025, [www.nhs2025.ca](http://www.nhs2025.ca), and/or Eco-Friendly Engineering 2025, [www.efe2025.ca](http://www.efe2025.ca) (under construction).

Sincerely,  
BTT2024 Committee & TTC2024 Committee

Please refer to <https://btt2024.ca/> and/or <https://ttc2024.ca/> for updates and details.

The banquet will be on Thursday June 20. Please advise us of any dietary restriction, special needs, etc. by emailing to [TELab@uwindsor.ca](mailto:TELab@uwindsor.ca)

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## Notes:

This in-person-only conference is for paid delegates only. If you have not registered, please do so at <https://www.uwindsor.ca/engineering/research/495/turbulence-and-energy-lab-annual-conference>. Remember to save the receipt as you checkout.

Only one registration per person is required to attend both BTT2024 & TTC2024. The presentations will proceed in series unless we run out of time slots, in which case some presentations will take place in parallel. Late submissions beyond what the parallel arrangement can accommodate will be disseminated via poster presentations.

Please **limit your presentation to 15 minutes**, leaving 3 minutes for discussion, and 2 minutes for changeover. In case of a no-show, the next presentation(s) will be advanced accordingly.





Selected papers will be considered for a Refereed Conference Proceedings, a Reviewed Volume with Springer Nature. The first come (accepted after the review process) first serve approach will be invoked, where overflows may be considered for another treatise.

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## Notation

- \* presenting author
- † corresponding author

## Paper/presentation Status

-  presentation + full-length paper
-  reviews conveyed, waiting for revision
-  paper accepted for the Springer Nature Proceeding
-  pending visa approval and/or registration confirmation; please update us

<b>Thursday, June 20, 2024</b>	
08:15–08:45	<b>Centre of Engineering Innovation (CEI) Atrium</b> <a href="#">Breakfast</a> Registration Package Pickup
08:45–09:00	<b>Welcome and Opening Remarks (Room 1101 CEI)</b> Rupp Carriveau VP Research – Shanthi Johnson, Dean of Engineering – Bill Van Heyst
09:00–09:40	<b>Plenary Lecture #1 (Room 1101 CEI)</b> Learn to Smile as the End of the World is Not Imminent, Hopefully – Graham T. Reader
	<b>Brightening Tomorrow, Room 1101. Co-Chairs: Gary Rankin &amp; Rupp Carriveau</b>
09:40–10:00	© Applications of Solar Energy: Energy Storage, Cooling, and Water Desalination Jeetesh Dwivedi, Khushwant S. Chauhan, Ravi Beniwal, Abhishek S. Kashyap, Himanshu Tyagi*† Department of Mechanical Engineering, Indian Institute of Technology Ropar, Rupnagar, Punjab, India
10:00–10:20	⚙ Experimental Study on the Heat Release of Spherical Premixed Flames Linyan Wang*†, Xiao Yu, Navjot Sandhu, David Ting, Ming Zheng Department of Mechanical, Automotive & Materials Engineering, University of Windsor, Windsor, Ontario, Canada
10:20–10:40	<a href="#">Coffee Break</a>
	<b>Light and Food, Room 1101. Co-Chairs: Ahmadreza Vasel-Be-Hagh &amp; Paul G. O'Brien</b>
10:40–11:00	Energetics & Operation of Vertical Farming Systems in Northern and Remote Communities Quade Digweed*† Harrow Research and Development Centre, Agriculture and Agri-Food Canada, Harrow, Ontario, Canada
11:00–11:20	Seasonal and Diurnal Patterns of Night Sky Brightness in Southwestern Ontario Robyn Jadischke*, William David Lubitz†, Alex Nauta, William Daniel Lubitz School of Engineering, University of Guelph, Guelph, Ontario, Canada School of Computer Science, University of Windsor, Windsor, Ontario, Canada
11:20–11:40	Phase Change Material for Enhancing Solar Drying of Rice Seed Fateme Hosseini Fashami*, David S-K. Ting†, Graham T. Reader Turbulence & Energy Laboratory, University of Windsor, Ontario, Canada
11:40–12:00	Economics & Ramping Capacity of Grid-Connected Peaking Generators Jamie C. Smith*†, Rupp Carriveau St. Clair College, Windsor, Ontario, Canada Environmental Energy Institute, University of Windsor, Windsor, Ontario, Canada
12:00–13:00	<a href="#">Lunch &amp; Poster Presentation</a>

<b>Thursday, June 20, 2024</b>	
	<b>Thriving Through Change, Room 1101. Co-Chairs: Himanshu Tyagi &amp; Graham Reader</b>
13:00–13:20	© Flame Chemiluminescence Imaging of Biofuel Isomers Ethanol and Dimethyl Ether Sprays in a Pressurized Environment Simon LeBlanc*†, Binghao Cong, Xiao Yu, Ming Zheng Department of Mechanical, Automotive & Materials Engineering, University of Windsor, Windsor, Ontario, Canada
13:20–13:40	Understanding Environmental Sound Emissions from Grain Dryers using Field Measurements and Sound Field Modeling Emily Younghans, William David Lubitz*†, James Dyke, Amadou Thiam School of Engineering, University of Guelph, Guelph, Ontario, Canada Ontario Ministry of Agriculture, Food and Rural Affairs, Guelph, Ontario, Canada
13:40–14:00	A Numerical Investigation on Local Thermofluid Characteristics of a Helical Twin-Tube Heat Exchanger Shehab Md Uddin*, David S-K. Ting, Rupp Carriveau† Turbulence & Energy Laboratory, University of Windsor, Windsor, Ontario, Canada
14:00–14:20	Multi-objective Optimization of a Spheric Thermal Storage Tank via Student Psychology-based Optimization Algorithm Xi Wang*†, Rupp Carriveau, David S-K. Ting, David Brown Turbulence & Energy Laboratory, University of Windsor, Windsor, Ontario, Canada Hydrostor Inc., Toronto, Ontario, Canada
14:20–14:40	
14:40–15:00	<a href="#"><u>Coffee Break</u></a>
	<b>Clean Energy and Clean Air, Room 1101. Co-Chairs: Vimy Henderson &amp; Quade Digweed</b>
15:00–15:20	On the Contrails of Hydrogen-Powered Airplanes Ryan Medlin, Spencer Meeks, Ahmadreza Vassel-Be-Hagh*† Mechanical Engineering Department, University of South Florida, Tampa, Florida, USA
15:20–15:40	Seasonal and Diurnal Variations of Atmospheric Concentrations of Volatile Organic Compounds in Windsor, Canada Taraneh Mihankhah*, Yushan Su, Tianchu Zhang, Advait Dhakane, Xiaohong Xu† Department of Civil and Environmental Engineering, University of Windsor, Windsor, Ontario, Canada Ontario Ministry of the Environment, Conservation, and Parks, Toronto, Ontario, Canada
15:40–16:00	Experimental Investigation of Contaminant Stripping Rates in Different Soils and Airflow Conditions Rajan Ray*†, Grant C. Hilbers, Nihar Biswas Department of Civil & Environmental Engineering, University of Windsor, Ontario, Canada
16:00–16:20	Feasibility of Green Hydrogen Integration for Tomorrow's Agriculture Greenhouse Kayes Md Abu Reza*, Rupp Carriveau†, David S-K. Ting Turbulence & Energy Laboratory, University of Windsor, Windsor, Ontario, Canada
16:20–16:40	<b>Path to Net Zero Emissions in Prince Edward Island, Canada</b> Nasim Mia, Milad Jalilian, Yulin Hu** Faculty of Sustainable Design Engineering, University of Prince Edward Island, Charlottetown, Prince Edward Island, Canada
16:45	<b>Bus leaves CEI, University of Windsor (@ 4:50 pm) for Banquet</b>
18:00–20:00	Banquet at Wedding in the Woods
20:00	Bus returns from banquet (~8:00 pm) to CEI, & then, hotels, as needed

<b>Friday, June 21, 2024</b>	
08:15–08:45	<b>Centre of Engineering Innovation (CEI) Atrium</b> <a href="#">Breakfast</a> Registration Package Pickup
08:45–09:00	<b>Gift Draw (Room 1101 CEI)</b> Rupp Carriveau
09:00–09:40	<b>Plenary Lecture #2 (Room 1101 CEI)</b> The Contribution of Infrastructure to a Resilient and Sustainable Community– Vimy Henderson
	<b>Building a Resilient Tomorrow, Room 1101. Co-Chairs: Kevin Baines &amp; Jamie Smith</b>
09:40–10:00	© Homogeneous Boiling at Ice-Liquid Interface Ty Hagan, Ahmadreza Vassel-Be-Hagh*† Mechanical Engineering Department, University of South Florida, Tampa, Florida, USA
10:00–10:20	Investigating the Influence of Weather on Grid Outage Characteristics Nicholas Schembri*, Jacqueline Stagner†, Rupp Carriveau Environmental Energy Institute, Turbulence & Energy Laboratory, University of Windsor, Windsor, Ontario, Canada
10:20–10:40	<a href="#">Coffee Break</a>
	<b>Greenhouse and Energy, Room 1101. Co-Chairs: Fadi Al-Daoud &amp; Paul Henshaw</b>
10:20–10:40	An Overview of Recent Advances in Using Direct Air Capture for Greenhouse Enrichment Sebastian Bissainthe-Vandermeer*, Leonard Gladzah, Yalda Radan, Paul G. O'Brien† Department of Mechanical Engineering, Lassonde School of Engineering, York University, Toronto, Ontario, Canada
10:40–11:00	✍ Model for LHTES Ventilation System Armando Scappaticcio*, Julia Aman† Department of Mechanical, Industria and Aerospace Engineering, Concordia University, Montreal, Quebec, Canada
11:00–11:20	Catalytic NOx Abatement for Euro 7/EPA2027 and beyond Navjot Sandhu*†, Xiao Yu, David Ting, Ming Zheng Department of Mechanical, Automotive & Materials Engineering, University of Windsor, Windsor, Ontario, Canada
11:20–11:40	Small Modular Reactors for Greenhouse Heating and Electricity Demand in Canada Anup Jwala Poudel*, Rupp Carriveau†, David S-K. Ting Turbulence & Energy Laboratory, University of Windsor, Windsor, Ontario, Canada
11:40–12:00	➔ Review and Insights on the Major Economy Developments in PEM Fuel Cells Huzaifa Mohammed Adam Harameen*†, Shokrullah Hussaini EXITCOM Recycling Lts, Kartepe, Turkey University of Nevada, Reno, USA
12:00–13:00	<a href="#">Lunch &amp; Posters</a>

<b>Friday, June 21, 2024</b>	
	<b>Sky, Solar, Wind, Water &amp; Wave, Room 1101. Co-Chairs: David Lubitz &amp; Niharendu Biswas</b>
13:00–13:20	The Effect of a Spanwise Triangular Groove on NACA 0012 Airfoil Performance at Re = 50,000 Negin Ebrahimi*, David S-K. Ting, Jacqueline A. Stagner† Turbulence & Energy Laboratory, University of Windsor, Windsor, Ontario, Canada
13:20–13:40	Development and Enhancement of Solar Reflective and Long-Wavelength Infrared (LWIR) Emissive Porous Polymers for Enhanced Passive Daytime Radiative Cooling Atousa Pirvaram*, Paul G. O'Brien, Siu N. Leung† Department of Mechanical Engineering, Lassonde School of Engineering, York University, Toronto, Ontario, Canada
13:40–14:00	Enzymatic Treatment of Cresols in Water Mohammadreza Haghighatnama*, Samira Narimannejad, Nihar Biswas, Keith E. Taylor† Department of Civil & Environmental Engineering, University of Windsor, Ontario, Canada Department of Chemistry and Biochemistry, University of Windsor, Ontario, Canada
14:00–14:20	Source-Linked Water Distribution Emergency Hydraulic Response Measures Stanley Madiziyire*, Jacqueline Stagner†, Rupp Carriveau Environmental Energy Institute, Turbulence & Energy Laboratory, University of Windsor, Windsor, Ontario, Canada
14:20–14:40	Autonomous Agent Power Contracting Antonio Bertuccio*, Jacqueline Stagner†, Rupp Carriveau Environmental Energy Institute, Turbulence & Energy Laboratory, University of Windsor, Windsor, Ontario, Canada
14:40–15:00	<u><a href="#">Coffee Break</a></u>
	<b>Eco-Friendly Society, Room 1101. Co-Chairs: Paul G. O'Brien &amp; Jacqueline A. Stagner</b>
15:00–15:20	A Preliminary Experimental and Numerical Investigation of Electrohydrodynamic Air Cooling of a Lithium-Ion Battery Sichang Xu*, Matthew Aguilar, Borhan Al-Diraie, Gary W. Rankin†, Sabreen Elastal, Asra Kala, Simrat Poonia, Sooraj Sunil, Bala Balasingam Mechanical, Automotive and Materials Engineering / Electrical and Computer Engineering, University of Windsor, Windsor, Ontario, Canada
15:20–15:40	Enhanced Radiative Cooling Using Parabolic Trough Underside Reflectors Po-Chun Chiu*, Atousa Pirvaram, Thomas Cooper, Siu N. Leung, Paul G. O'Brien† Department of Mechanical Engineering, Lassonde School of Engineering, York University, Toronto, Ontario, Canada
15:40–16:00	Street Level Impacts of Electric Vehicle Loading Joshua Martin*, Jacqueline Stagner†, Rupp Carriveau Environmental Energy Institute, Turbulence & Energy Laboratory, University of Windsor, Windsor, Ontario, Canada
16:00–16:20	
16:20–16:40	<b>Awards Committee Meet</b> <b>Committee: Paul O'Brien (Chair), David Lubitz, Jacqueline Stagner, Ahmadreza Vassel-Be-Hagh</b>
16:40–17:00	<u><a href="#">Awards' Presentation in Atrium</a></u>
	Thank you for your contribution. We look forward to seeing you next year.

†The conference awards are for: BTT2024 Best Presenter, BTT2024 Exceptional Presenter, BTT2024 Outstanding Presenter  
TTC2024 Best Poster

Eco-Friendly Engineering 2025, June 19-20, 2025. Information will become available at [www.efe2025.ca](http://www.efe2025.ca).

Nurturing Humanity Sustainably 2025, June 19-20, 2025. Details will be updated fitfully at [www.nhs2025.ca](http://www.nhs2025.ca).

Forging Forward Tenably 2026. Information will become available at [www.fft2026.ca](http://www.fft2026.ca) (TBC).